

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a response to the Official Action dated December 5, 2005. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-8 are under consideration in this application. Claims 1 and 4-6 are being amended, as set forth in the above marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicants' invention. Claims 7-8 are being added to recite other embodiments described in the specification.

Additional Amendments

The specification and the claims are being amended to correct formal errors and/or to better recite or describe the features of the present invention as claimed. All the amendments to the claims are supported by the specification. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Formality Rejection

Claims 1-6 were rejected under 35 U.S.C. § 101 on the grounds that the claims are directed to non-statutory subject matter. The specification was objected to for failing to relate the sequence listing to the sequences in the figures and for including embedded hyperlinks on page 1 of the disclosure, and the Examiner is requiring correction thereof. As indicated, the specification and the claims are being amended as required by the Examiner. Accordingly, the withdrawal of the outstanding informality rejection is in order, and is therefore respectfully solicited.

Prior Art Rejections

Claims 1, 3, 4 and 6 were rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 6,876,930 to Murray et al. (hereinafter "Murray"), and claims 2 and 5 were rejected under 35 U.S.C. § 103 as being unpatentable over Murray in view of US Patent No. 6,519,592 to Getchius (hereinafter "Getchius"). The above rejections have been carefully

considered, but are most respectfully traversed in view of the newly submitted claims, as more fully discussed below.

The method of calculating the frequency of appearance of a keyword of the invention (for example, the embodiment depicted in Fig. 8), as now recited in claim 1, uses a first database in which information about a base sequence or an amino acid sequence is stored and a second database in which document data is stored. The method comprises: a first text data extraction step for extracting first text data 106 (for example, “*a thesis describing the result of research into a particular base sequence*” p. 4, last paragraph) from said first database 105 (Fig. 2) which contains a base sequence or an amino acid sequence of a gene or protein of interest (e.g., “AGCT” p. 5, 2nd to last paragraph, 201 in Fig. 2, or 401 in Fig. 4) inputted by a user; an identifier extraction step for extracting an identifier 202 (e.g., P00005) identifying document data (e.g., “As seen in the example”) in said first text data 106 from said extracted first text data 106 which contains the base sequence or the amino acid sequence 201; a second text data extraction step for extracting second text data 108 (for example, “*the data describes the result of molecular-biological study into a gene or protein*” p. 5, 1st paragraph) from said second database 107 (Fig. 3) which contains said extracted identifier 301 (same as 202, e.g., P00005); an appearance frequency calculation step for sequentially reading keywords 501-503 from a keyword table 110 (Fig. 5) containing keywords of known functions or characteristics of genes or proteins from said first database 105 (e.g., “cell recognition” p. 6, last paragraph, “axon guidance”, “axon midline choice point recognition” etc.; Fig. 5), and for calculating a frequency of appearance of each of said keywords 501-503 in said extracted second text data 108; and a displaying step for displaying a frequency of appearance of each of said keywords 501-503 in a corresponding position in said keyword table 110 (e.g., Figs. 6-7).

The invention recited in claim 4 is directed to a program embedded in a storage medium for causing a computer to carry out the keyword frequency calculation method of claim 1.

“*The user can thus learn the frequency of each keyword related to the sequence AGCT in the text data 108 in the second file system 107 (p. 6, 2nd paragraph),*” so as to find out the functions or characteristics of the particular gene or protein (p. 1, lines 18-19; P. 3, 2nd paragraph).

In accordance with the invention, when a searcher wishes to know the functions or characteristics of a gene or protein with a particular sequence, the searcher can be provided with a list of keywords indicating the functions or characteristics of genes or proteins

containing the particular sequence by entering the particular sequence information itself as a search key, the list showing the keywords in terms of the importance, or the frequency of appearance in document data (p. 3, 2nd paragraph). By viewing the keyword frequency table in Fig. 7, the research can know how much literature exists on the subject to know whether the subject has already been researched or studied enough so as to determine whether to select or change the research's course in research or study (p. 3, lines 8-16).

Applicants respectfully contend that none of the cited references teaches or suggests “a first text data extraction step for extracting first text data 106 from said first database 105 which contains a base sequence or an amino acid sequence of a gene or protein of interest inputted by a user,” or “an appearance frequency calculation step for sequentially reading keywords 501-503 from a keyword table 110 (Fig. 5) containing keywords of known functions or characteristics of genes or proteins from said first database 105 and for calculating a frequency of appearance of each of said keywords 501-503 in said extracted second text data 108” according to the invention.

In contrast, Murray only examines gene expression profile data retrieved from public literature database to discover candidate genes (Abstract) and tools that can process, summarize and cross-reference the enormous amounts of public literature and to allow the data to be used in combination with gene expression profiles thereby discovering candidate genes. The method of identifying candidate genes of Murray comprises: obtaining gene expression profile data for a plurality of DNA sequences, using information extraction algorithms to retrieve and extract pathway information, cross-referencing said pathway information to said DNA sequences, ranking the pathway information based on a ranking of a publication in a citation index, and viewing said cross-referenced information and said ranking. Murray rapidly determines the relationship between different genes once gene expression profiling experiments were performed on those genes. Murray conducts research at the gene level, without involving any “base sequence or an amino acid sequence” of a gene or protein of interest (which is shorter than a gene) as the invention. Murray neither link genes/proteins of known functions/characteristics with the gene/protein of interest via the particular “base sequence or an amino acid sequence” contained in both the gene/protein of interest and the genes/proteins of known functions/characteristics.

As admitted by the Examiner (p. 3, last paragraph of the outstanding Office Action), Murray only uses “*journal titles*” as keywords to score the times each of the journal titles was referenced in other journals, rather than using any “*known functions or characteristics*” of genes or proteins, such as “cell recognition,” “axon guidance,” “axon midline choice point

recognition" etc. as keywords to score the times each of the keywords was referenced in the extracted second text data 108 which contains the same extracted identifier (e.g., P00005) as the first text data 106 which contains the base/amino acid sequence of the gene/protein of interest inputted by a user. Table 1 of Murray (cols. 18-20) only shows scores of journals, which is essentially different from the keyword table 110 (Fig. 5) of the invention.

Getchius was relied upon by the Examiner (p. 6, 4th paragraph of the outstanding Office Action) to teach using a tree structure for the keyword table as recited in claims 2 and 5 of the invention. However, Getchius is applied to a business listing (Abstract; e.g., "*restaurant*" may be stored in a tree that includes the sub-category of "*ethnic restaurant*," which may further include the sub-category "*greek restaurant*." col. 33, lines 19-21), rather than any "known functions or characteristics of genes or proteins" as the keywords in the keyword table 110 of the invention.

The Examiner's reliance upon the "common knowledge and common sense" of one skilled in the art (p. 6, last paragraph of the outstanding Office Action) for the motivation for combining the teachings Murray with Getchius' tree structure did not fulfill the agency's obligation to cite references to support its conclusions. Instead, the Examiner must provide the specific teaching of allegations of the combination on the record to allow accountability.

It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based. Zurko, 258 F.3d at 1385, 59 USPQ2d at 1697 ("[T]he Board cannot simply reach conclusions based on its own understanding or experience-or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings."). While the court explained that, "as an administrative tribunal the Board clearly has expertise in the subject matter over which it exercises jurisdiction," it made clear that such "expertise may provide sufficient support for conclusions [only] as to peripheral issues." Id. at 1385-86, 59 USPQ2d at 1697. As the court held in Zurko, an assessment of basic knowledge and common sense that is not based on any evidence in the record lacks substantial evidence support. Id. at 1385, 59 USPQ2d at 1697. See also In re Lee, 277 F.3d 1338, 1344-45, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002) (In reversing the Board's decision, the court stated "'common knowledge and common sense' on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's

obligation..The board cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must set forth the rationale on which it relies."). MPEP2144.03

Such an obligation to provide specific teaching(s) also applies to other existing or future obviousness rejections.

To adequately traverse the Examiner's assertions, Applicants respectfully contend that one skilled in the art will not be motivated to "display a frequency of appearance of each of said keywords in a corresponding position in said tree-structured keyword table 110" as claimed by the Applicants based on the Getchius' tree-structured business list, except by using Applicants' method as a blueprint to adopt "known functions or characteristics of genes or proteins from said first database 105" as keywords.

Getchius' tree-structured business list simply did not constitute common knowledge in the art of gene/protein research, especially regarding adopting "known functions or characteristics of genes or proteins from said first database 105" as keywords in a tree structure as shown in Fig. 5 of the invention.

"It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based. Zurko, 258 F.3d at 1385, 59 USPQ2d at 1697 ("[T]he Board cannot simply reach conclusions based on its own understanding or experience-or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings."). While the court explained that, "as an administrative tribunal the Board clearly has expertise in the subject matter over which it exercises jurisdiction," it made clear that such "expertise may provide sufficient support for conclusions [only] as to peripheral issues." Id. at 1385-86, 59 USPQ2d at 1697. As the court held in Zurko, an assessment of basic knowledge and common sense that is not based on any evidence in the record lacks substantial evidence support. Id. at 1385, 59 USPQ2d at 1697. See also In re Lee, 277 F.3d 1338, 1344-45, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002) (In reversing the Board's decision, the court stated " 'common knowledge and common sense' on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation. The board cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must set forth the rationale on which it relies."). "As such the Examiner shall provide "some concrete evidence in the record in support of" factual assertion to rely solely

on "common knowledge" in the art as the principal evidence.

Applicants will further contend that the combination of references used by the Examiner merely consists of selecting bits and pieces from each reference, and then combining those bits and pieces using knowledge or hindsight gleaned from the disclosure of the present invention as a guide to support the combination. The well established rule of law is that each prior art reference must be evaluated as an entirety, and that all of the prior art must be considered as a whole," *Panduit Corp. v. Dennison Mfg. Co.*, 227 USPQ 337, 344 (Fed. Cir. 1985). See *Para-Ordinance Mfg. Inc. v. SGS Importers Intl., Inc.*, 73 F.3d 1085, 37 USPQ2d 1237 (Fed. Cir. 1995) ("Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor.").

Even if, arguendo, one skilled in the art were motivated to combine the teachings in Murray and Getchius as suggested by the Examiner, such combined teachings would still fall short in fully meeting the Applicants' claimed invention as set forth in claim 1, since neither references teach adopting "known functions or characteristics of genes or proteins from said first database 105" as keywords in a tree structure as shown in Fig. 5 of the invention.

Applicants contend that neither Murray, Getchius, nor their combinations teach or disclose each and every feature of the present invention as disclosed in independent claims 1 and 4. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

Conclusion

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art reference upon which the rejections in the Office Action rely, Applicants respectfully contend that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance

of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and telephone number indicated below.

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